

NYMPHAEA AND NUPHAR AGAIN.

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It is nearly thirty years since E. L. Greene¹ attacked the validity of the generic names *Nymphaea* and *Nuphar*. He "discovered" the fact that Salisbury in 1806 (or 1805)² divided into two parts the genus *Nymphaea* as then understood, giving the name *Castalia* to the white waterlilies, and retaining *Nymphaea* for the yellow flowering cow-lilies. It was in 1808 or 1809 that Sir J. E. Smith³ proposed to retain *Nymphaea* for the waterlilies, and to call the cow-lilies by their old classic name of *Nuphar*. Greene, Britten,⁴ Lawson⁵ and others established the priority of Salisbury's work beyond a possibility of doubt. They also discussed the probable causes for the general acceptance of Smith's generic names, and the neglect of Salisbury's.

For various reasons, however, many botanists have refused to return to Salisbury's generic names. The clearest and strongest argument for the refusal was set forth by Dr. John Briquet in his *Prodrome de la Flore Corse* (pp. 577-9). In this book, and in a personal letter to the writer, he opposed Salisbury on the basis of Art. 45 of the International Rules of Botanical Nomenclature. This article declares that in dividing a genus, the old name must be retained for that portion containing the largest number of species. Salisbury had acted contrary to this rule. In the course of the argument in the *Prodrome*, Dr. Briquet further points out that Salisbury's diagnosis of *Nymphaea* was opposed to the definition of the genus given by Linnaeus in the sixth edition of the *Genera Plantarum*. In following up the suggestion of Dr. Briquet, facts have come to light, which would seem to settle the controversy conclusively in favor of Smith's nomenclature.

In the fifth edition of the *Genera Plantarum* (1754), which is taken as the starting point for generic diagnoses (Internat. Rules Art. 19), *Nymphaea* is defined thus: (p. 227).

CAL. *Perianthium* pentaphyllum s. tetraphyllum, magnum, coloratum, persistens.

¹ Bull. Torr. Bot. Club, **14**: 177; 257; **15**: 84.

² König & Sims Ann. of Bot. **2**: 69-76. Salisbury's paper probably appeared in June 1805. The volume was completed in 1806, and is so dated.

³ Florae Graecae Prodromus, **1**: 360. Exact date of this part uncertain.

⁴ Journ. of Bot. Brit. & For. **26**: 6-10.

⁵ Trans. Roy. Soc. Canada, Sec. IV. **6**: 97-125.

COR. *Petala* numerosa (quindecim saepe), calyce minora, germinis lateri insidentia, serie plusquam simplici

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OBS. Calyx & Corolla quoad numerum & figuram incerta sunt, hinc

N. lutea Calyce pentaphyllo, foliolis subrotundis, Petalis minimis.

N. alba Calyce tetraphyllo, foliolis ovatis, corollam vix superantibus.

Nelumbo *Pericarpium turbinatum, truncatum, etc., etc.*

In the description of the other genera in this work, Linnaeus usually did not name any species. In the case of *Nymphaea*, however, he pointed out in his "Observations," as shown above, that three distinct elements were included in it.

The important differences between these three elements had so impressed Linnaeus in the course of ten years, that he changed the description of the genus in the sixth edition of *Genera Plantarum* (1764) to read thus: (p. 264).

CAL. *Perianthium* inferum, tetraphyllum, magnum, supra coloratum, persistens.

COR. *Petala* numerosa (quindecim saepe), germinis lateri insidentia, serie plusquam simplici.

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N. lutea Calyce pentaphyllo: foliolis subrotundis, Petalis minimis a reliquis differt.

Nelumbo *Pericarpium turbinatum, truncatum, etc., etc.*

It will be noted that the word *pentaphyllum* is omitted from the description of the calyx, and *calyce minora* is omitted from the description of the corolla. Both of these omitted expressions apply to the *N. lutea* element of the former edition. The description as thus amended applies strictly to the *N. alba* element. This is further emphasized by the words *Cor. germinis lateri insidentia*, referring to the insertion of the petals on the side of the ovary in the white waterlily group. This character does not occur in the cow-lilies, or in the lotus (*Nelumbo*).

As in the former edition, there was usually no citation of species in the sixth edition of Linnaeus's *Genera Plantarum*. Here, however, *N. lutea* and *Nelumbo* were named. *N. lutea* was said to "differ" from the others by certain characters. The mention of the two "aberrant" (Briquet, p. 578) elements, and the omission in this edition of the name of the fully described waterlily element, shows that the genus *Nymphaea* was at this time intended by Linnaeus to

refer to the true waterlilies. He excluded the other two groups, but omitted the coining of a new name for them. Surely this omission cannot invalidate the name of the group which he did accurately describe.

Linnaeus's definition of Nymphaea of the sixth edition of the *Genera Plantarum* was copied *verbatim* in the various 7th and 8th editions. It was accepted and amplified by Jussieu in his *Genera Plantarum* (1789). There we read, p. 68,

NYMPHAEA, T. L. * *Nenuphar*. Calix multipartitus laciniis multiplice ordine, exterioribus 4-5 extus viridibus, caeteris interioribus (petala T. L.) coloratis, petaloideis. Stamina numerosa, multiplici ordine germinis lateribus affixa; filamenta exteriora latiora et petaloidea; etc., etc.

Jussieu called all of the perianth a calyx, whose inner members are colored and petaloid. The numerous stamens are attached to the sides of the ovary, and the outer have broad, petaloid filaments. All of these characters apply only to the white waterlily group, and not at all to the cow-lilies or the lotus. If, therefore, any doubt remains as to the meaning of Linnaeus's Nymphaea, no doubt can remain regarding Jussieu's. When we add that Adanson in 1763¹ had separated the genus *Nelumbo* from the original Nymphaea of Linnaeus (1753-54), we have the facts as they were when Salisbury wrote.

Salisbury in 1805 completed the segregation of the old genus Nymphaea along lines already pointed out by Linnaeus. But he was entirely wrong in applying Linnaeus's amended name Nymphaea to the part of the genus which Linnaeus had definitely excluded from his mature generic characterization, and in coining the new name *Castalia* for the group, which both Linnaeus and Jussieu had clearly intended in their descriptions of the genus Nymphaea. A comparison of Salisbury's generic diagnosis with those quoted from Linnaeus and Jussieu will show how he reversed the meaning of Nymphaea. He says (König and Sims *Ann. of Bot.* 2: 71, 1806),

NYMPHAEA

Calyx 5-6-phyllus, toro insertus, petaloideus. Nectaria 11-16, toro inserta, lamellaria, dorso mellifera. Filamenta 90-160, toro inserta, sub anthesi a pericarpio elastice dissilientia, etc.

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¹ *Fam. Pl.* 2: 76.

CASTALIA

Calyx 4-5-phyllus, marginem tori cingens. Petala 20-30, pericarpio a basi usque ad medium inserta. Filamenta 60-150, pericarpio altius inserta, libera, etc.

The facts which we have presented were evidently known to Sir J. E. Smith. In his *Florae Graecae Prodrromus* (1808-09) he approved of Salisbury's division of the old genus *Nymphaea*, but he showed disapproval of Salisbury's nomenclature by remarking, "at minus bene *Nymphaeam antiquorum veram, nomine, Castalia....distinxit.*" Also, in Rees's *Cyclopedia* (Vol. 25, Art. *Nymphaea*) he noted that the difference between the white- and the yellow-flowered groups of *Nymphaea* were recognized by Linnaeus. Smith was right, therefore, in retaining *Nymphaea* L. emend., for the white waterlilies, and restoring the old prelinnean name *Nuphar* for the cow-lily group. For this latter group had not previously received a valid generic name in post-linnean times.

It would be only a technicality to argue that, according to rules of nomenclature accepted in some places, the Linnean genera are not valid because no species are cited as belonging to them. A comparison of the texts of the fifth and sixth editions of the *Genera Plantarum* shows that *N. alba* is the *Nymphaea* of ed. 6. And it is generally accepted that ed. 5 is referred to the *Species Plantarum* of 1753 (Internat. Rules, Art. 37, 38). Furthermore, the International Rules admit a genus as valid if adequately described, regardless of whether any species are mentioned. Thus *Nymphaea* stands for the white waterlilies, on the authority of Linnaeus 1764.

We must conclude therefore that the valid genera are:

Nymphaea Linn. 1764 =	{	<i>Nymphaea</i> Linn. 1754 ('53) in part.
	{	<i>Castalia</i> Salisb. 1805-06.
Nuphar Sm. 1808-09 =	{	<i>Nymphaea</i> Linn. 1754 ('53) in part.
	{	<i>Nymphaea</i> Salisb. 1805, <i>not</i> Linn. 1764.
Nelumbo Adans. 1763 =	{	<i>Nymphaea</i> Linn. 1754 ('53) in part.
	{	<i>Nelumbium</i> Juss. 1789.

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